Table 4.1
Stormwater Runoff and Discharge Scenarios for Dilution Modeling -- Trans-Lake Water Quality Study

Stormwater Alternative	Bridge Lane Alternative	Rainfall/Runoff Scenario	Average Flow per Catch Basin or Vault (cfs)[1]	No. Catch Basins or Vaults per Pontoon Section	Average Storm Flow Rate to Containment Lagoon (cfs)[1]	Total Flow *Volume* per Storm Event (ft^3)[2]	Dimensions of Oil Containment Lagoon per Pontoon Section (feet)				Total Time Req'd to Fill Containment Lagoon at Avg. Flow Rate (hours)	Volume-Based Dilution Ratio of Total Storm Flow into Lagoon[4]
							Length	Width	Draft (Depth)[3]	Volume (ft^3)		
I. Pontoons with Catch Basins	4	10% WQ Treatment	0.003	6	0.018	143.4	360	3.1	12	13,591	209.7	95
		50% WQ Treatment	0.016	6	0.096	717.2	360	3.1	12	13,591	39.3	19
		WQ Treatment	0.032	6	0.192	1434.4	360	3.1	12	13,591	19.7	9
	6	10% WQ Treatment	0.003	8	0.024	226.9	360	6.1	12	26,460	306.3	117
		50% WQ Treatment	0.017	8	0.136	1134.6	360	6.1	12	26,460	54.0	23
		WQ Treatment	0.034	8	0.272	2269.2	360	6.1	12	26,460	27.0	12
	8	10% WQ Treatment	0.002	14	0.028	272.0	360	18.1	12	78,300	776.8	288
		50% WQ Treatment	0.010	14	0.140	1359.9	360	18.1	12	78,300	155.4	58
		WQ Treatment	0.020	14	0.280	2719.9	360	18.1	12	78,300	77.7	29
II. Pontoons with Vault System	4	10% WQ Treatment	0.007	2	0.014	143.4	360	3.1	12	13,591	269.7	95
		50% WQ Treatment	0.037	2	0.074	717.2	360	3.1	12	13,591	51.0	19
		WQ Treatment	0.075	2	0.150	1434.4	360	3.1	12	13,591	25.2	9
	6	10% WQ Treatment	0.012	2	0.024	226.9	360	6.1	12	26,460	306.3	117
		50% WQ Treatment	0.059	2	0.118	1134.6	360	6.1	12	26,460	62.3	23
		WQ Treatment	0.119	2	0.238	2269.2	360	6.1	12	26,460	30.9	12
	8	10% WQ Treatment	0.014	2	0.028	272.0	360	18.1	12	78,300	776.8	288
		50% WQ Treatment	0.071	2	0.142	1359.9	360	18.1	12	78,300	153.2	58
		WQ Treatment	0.142	2	0.284	2719.9	360	18.1	12	78,300	76.6	29

Notes:

[1] Flow rate values calculated based on Ecology's WWHM Methodology using KCRTS 2-year flow and a 15-minute time-step.

[2] Total flow volumes for each defined storm event were calculated using the SCS Method in the WWHM.

[3] The minimum lagoon draft (depth) of 12 feet has been used to calculate the minimum lagoon volumes (worst-case condition). Information provided by WSDOT engineers shows that the bridge draft (depth) will range from a minimum of 12 feet in the middle of the floating bridge to 22 feet at the ends of the bridge, with an average draft of 17 feet.

[4] Dilution values assume entire volume of stormwater discharge is retained and mixed into the containment lagoon volume.

Abbreviations:

cfs = cubic feet per second
No. = number
ft^3 = cubic feet
Req'd = required
Avg. = average
Ecology = Washington State Department of Ecology
WWHM = Western Washington Hydraulic Manual
KCRTS = King County Run-Time Series
SCS = Soil Conservation Service
WSDOT = Washington State Department of Transportation